

Energy and utilities · Industrial machinery and heavy equipment

## Diakont

High-tech equipment manufacturer improves productivity by 50 percent for faster time to market

### Products

Solid Edge, NX

### Business challenges

Improve quality and accelerate the development of high-tech equipment

Introduce a paperless design and manufacturing process at a new production facility

Exploit NC programming automation technology

### Keys to success

Transition from 2D to 3D modeling using Solid Edge

Creation of drawings from 3D models

Integration of Solid Edge and NX CAM

Use of product design data for manufacturing planning

Prompt and professional support from Siemens PLM Software

### Results

Design and manufacturing planning productivity increased by up to 50 percent



**Integration of Solid Edge and NX CAM reduces non-compliance caused by design and manufacturing errors by 70 percent**

### Enhancing safety in dangerous industries

Diakont Group, consisting of ZAO KTIPI Gasproject, ZAO Diakont, OOO Diakont Innovatica, Diakont Advanced Technology (USA), and Diakont s.r.l. (Italy), develops, manufactures, and delivers high-tech safety systems for the nuclear and natural gas industries. The group also offers

hazardous facilities monitoring and maintenance services, and designs and constructs such facilities.

Company experts with extensive hands-on experience in high-tech equipment design perform the entire product engineering cycle, including mechanical and electrical design. ZAO Diakont has a production facility with modern high-precision numerical control (NC) tools. The facility includes machining and assembly shops equipped with coordinate measuring machines (CMMs) and printed circuit board (PCB) assembly lines.

### Results *(continued)*

Higher-quality documentation resulted in a 70 percent reduction in non-compliance caused by design and manufacturing errors

Significant quality improvement in terms of both process and product

Shorter time-to-market

### Gradual move to design automation

Diakont Group has taken a step-by-step approach to deploying computer-aided design (CAD) and computer-aided manufacturing (CAM). Initially the development process involved a number of different in-house solutions used for design, and there was no document management system.

In 2004, company management decided to switch to commercial CAD software. They selected a CAD system with a simple and affordable licensing plan but, by 2007, the amount of design projects had grown and it became obvious that this solution – basically a “digital drawing board” – was not sufficient. Management then began looking for a new, more advanced solution.

They chose Solid Edge® software from product lifecycle management (PLM) specialist Siemens PLM Software on the basis of the system’s comprehensive functionality. For instance, Solid Edge supports 3D

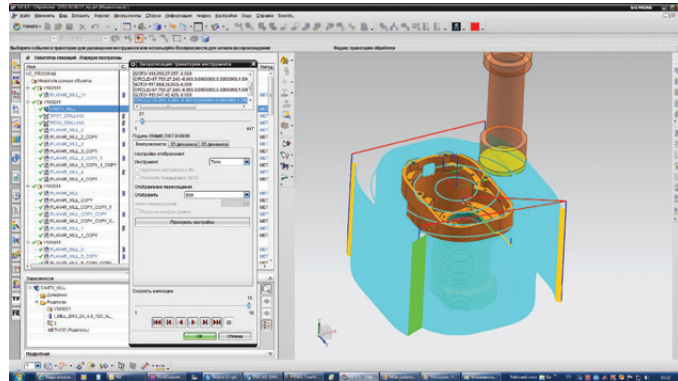
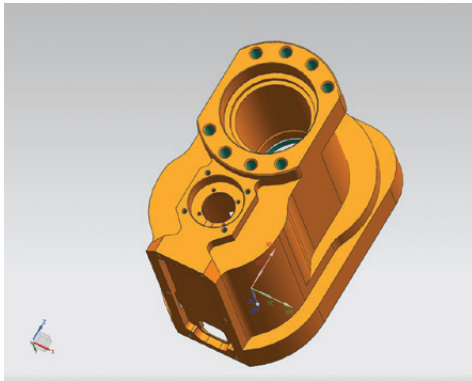
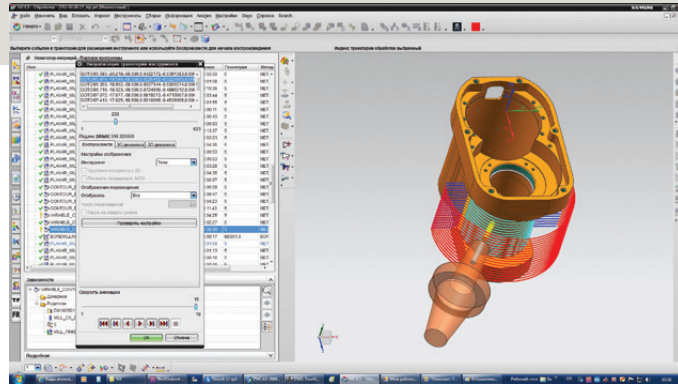
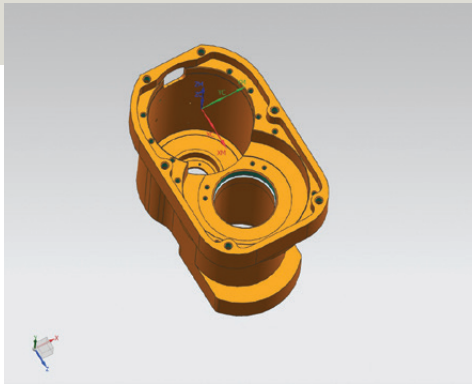
modeling and the automated creation of drawings, views, and sections from a 3D model. “This is really important since we have not switched to a totally paperless process and sometimes we still use production drawings,” explains Mikhail Uvarov, head of the Analytics department at Diakont Innovatica.

Other reasons for choosing Solid Edge included the fact that the system is totally adapted to the Russian language; supports the national ESKD (Russia’s Unified System of Design Documentation) standards; is customizable to meet the company’s needs; and includes ready-to-use databases, knowledge assets and an engineering handbook, as well as help files and self-learning tutorials.

The company noted that Solid Edges outperforms its competitors in terms of price/performance.







**CAM came next**

As the number of numerical control (NC) tools increased in 2011 and 2012, it became clear that shopfloor programming was no longer an option. After considering several competing CAM solutions, Diakont selected NX™ software from Siemens PLM Software.

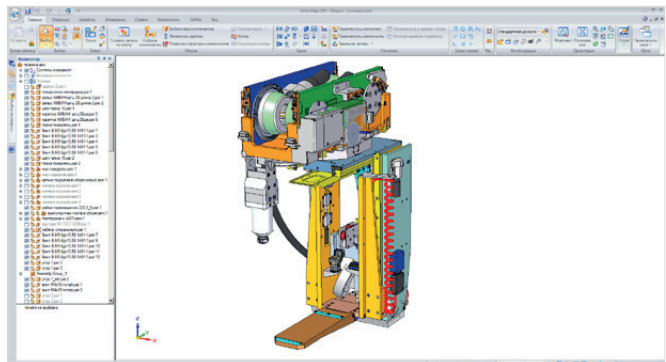
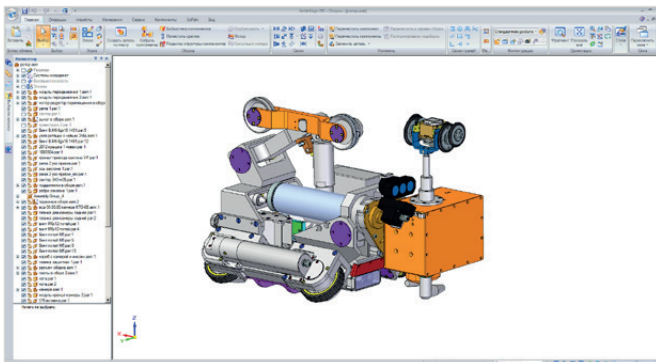
NX was chosen primarily because its CAM functionality takes greater advantage of the capabilities of the company's NC machine tools compared to competing solutions. It also supports the specific features of the company's tools and

controllers, so there is no need to make corrections to the postprocessor's output. In addition, NX CAM supports user-defined postprocessor commands and cycles, as well as customized machining templates.

Moreover, Diakont takes advantage of the extensive functionality of NX CAM, including solid modeling; assembly creation and machining of assemblies; and drafting (for the creation of manufacturing drawings and setup charts). The company also utilizes the software's programming for turning operations and multi-spindle lathes and multi-axis milling.

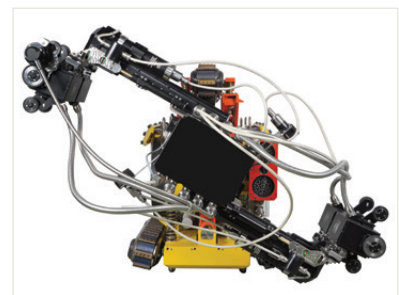
*"The keys to our successful implementation of Solid Edge and NX CAM are the high quality and extensive functionality of the products from Siemens PLM Software, their mutual integration, and their integration with PDM and PLM systems."*

Mikhail Uvarov  
Head, Analytics Department  
Diakont Innovatica



“We have improved design and manufacturing productivity for most parts by 30 to 40 percent and for complex parts by 50 percent. Documentation quality has also improved since drawings are created from 3D models. Our customers benefit from shorter delivery times since we perform design and manufacturing planning faster, and these stages take up to 70 percent of the project cycle time.”

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Since Diakont now uses integrated CAD/CAM functionality, the time needed for software training has been significantly reduced. Also, since Siemens PLM Software provides file format compatibility between Solid Edge and NX CAM, Diakont did not have to spend any effort on integrating the two systems, with manufacturing planning completely automated.

#### Step-by-step deployment

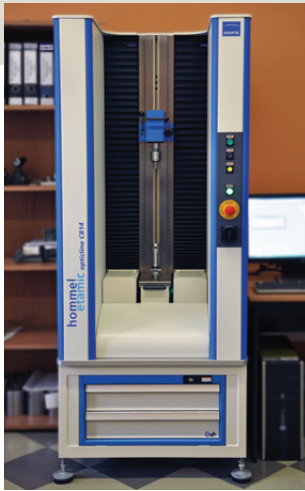
The software deployment was a multi-stage process. First, two Solid Edge seats were purchased for a trial run. The trial was supported by training and seminars. “It was a pilot deployment. Company management wanted to evaluate the system’s value prior to making it a company standard,” recalls Uvarov.

He says that initially two designers were trained and began using Solid Edge to identify the system’s benefits in terms of document quality, performance and so on.

Having analyzed the results, management decided to gradually increase the number of licenses of Solid Edge. In 2012, Diakont standardized on Solid Edge as its primary design tool, and the company now has 60 seats of Solid Edge. The system is used for developing complex parts that require NC machining. In 2014 the company purchased NX CAM for some of its manufacturing engineers.

Today, nearly all projects at Diakont are developed using Solid Edge, while NX CAM is used for creating NC code for many equipment types, including the Moore CPWZ500 jig grinder; the Mazak, Datron, DMG and Mikron milling and mill-turn machining centers; the Sodick wire electrical discharge machining (EDM) tools; and many others. Presently the company is commissioning the Traub TNL 18 Swiss turning machine for batch roller drive manufacturing and expects to see significant productivity improvements.





### Solid benefits

The use of the CAD and CAM solutions from Siemens PLM Software has greatly reduced development time. One of the reasons for that is faster manufacturing planning. Previously, the company had incompatible CAD and CAM systems so the manufacturing engineer had to re-create a model from scratch based on its 2D drawing. The process was very long and error-prone. Now, since Solid Edge and NX CAM are integrated, there are no errors and productivity is much improved.

Design and manufacturing planning productivity for complex parts has increased by 50 percent.

The design models are used for manufacturing planning, so product non-compliance caused by design and manufacturing errors has been reduced by 70 percent. This is important because Diakont makes products to-order or in small batches, and all products undergo thorough testing to avoid delivering a non-compliant item to the customer. Previously, there were

mismatches between the design and the manufacturing documents, which caused assembled products to have components that were non-compliant with the latest design version. Now, using Solid Edge and NX CAM, final products are fully compliant with the approved design.

Uvarov notes, "We have improved design and manufacturing productivity for most parts by 30 to 40 percent, and for complex parts by 50 percent. Documentation quality has also improved since drawings are created from 3D models. Our customers benefit from shorter delivery times since we perform design and manufacturing planning faster, and these stages take up to 70 percent of the project cycle time."

He also points out that Siemens PLM Software facilitated the CAD and CAM deployment. Siemens PLM Software experts regularly provide training to help users master new functionality in new releases.

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### Solutions/Services

Solid Edge  
[www.siemens.com/solidedge](http://www.siemens.com/solidedge)  
NX CAM  
[www.siemens.com/nx](http://www.siemens.com/nx)

### Customer's primary business

ZAO Diakont makes high-tech safety systems for the nuclear and natural gas industries.  
[www.diakont.ru](http://www.diakont.ru)

### Customer location

St. Petersburg  
Russia

**"The Siemens PLM Software team is responsive and provides professional and prompt technical support."**

Mikhail Uvarov  
Head, Analytics Department  
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Uvarov concludes, "The keys to our successful implementation of Solid Edge and NX CAM are the high quality and extensive functionality of the products from Siemens PLM Software, their mutual integration,

and their integration with PDM (product data management) and PLM systems. Also, the Siemens PLM Software team is responsive and provides professional and prompt technical support."



**"Now, since Solid Edge and NX CAM are integrated, there are no errors and productivity is much improved."**

Mikhail Uvarov  
Head, Analytics Department  
Diakont Innovatica

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